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10/718,401	11/21/2003	Chatschik Bisdikian	YOR920030233US1	9742

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THE LAW OFFICE OF IDO TUCHMAN
ECM #72212
PO Box 4668
New York, NY 10163-4668

EXAMINER	
ZHE, MENG YAO	

ART UNIT	PAPER NUMBER
2195	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair@tuchmanlaw.com
idotuchman@gmail.com

Office Action Summary	Application No.	Applicant(s)	
	10/718,401	BISDIKIAN ET AL.	
	Examiner	Art Unit	
	MENGYAO ZHE	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-35 are presented for examination.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/1/2008 has been entered.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-6, 11, 15-19, 22, 24-30, 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Bjornson et al., Pub No. 2002/0194173 (hereafter Bjornson).

5. Bjornson was cited in the previous office action.

6. As per claims 1, 15, 25, Bjornson teaches a method for dynamically adjusting a workload of an active server, the method comprising:

Dividing the workload into a collection of workload units, each unit including its own key identifier (Para 53, lines 4-8: each smaller task corresponds to a workload unit; units a, b, c of Fig 5: task 1, task 1.B, Task1.A);

Associating the active server (Para 54: each worker computer corresponds to a server) with at least one parent workload group (Fig 5, unit a is one example of a parent workload group), the parent workload group including the collection of workload units such that the collection of workload units belonging to the parent workload group share an identical sequence of values at a specified depth value of their key identifiers, the identical sequence of values defining a group key identifier associated with the parent workload group (Fig 5: the parent workload group such as Task1 has a collection of workload units such as Task1.B and Task1.A where at the depth of 2 the two subtasks, Task1.B and Task1.A, share an identical sequence in the identifier, which is Task1 in this case);

Independently determining by the active server that an overload condition exists at the active server (Para 60);

If the overload condition exists: increasing the depth value of the parent workload group such that at least two child workload groups are identified (Para 60, 61);

Assigning a target server to manage at least one of the child workload groups (Para 56, 60).

7. As per claims 2, 16, and 26, Bjornson teaches if the overload condition exists, identifying at least one candidate server to which the child workload groups may be distributed using a decentralized protocol, the at least one candidate server including the target server (Paragraphs 56 and 60: one of the child is kept by the original worker computer, which corresponds to a server. The other child is added to the VSM bulletin board for another worker computer or server to take when it is not busy; Moreover the decision of splitting the task is made by the worker computer alone, thus it is decentralized.).

8. As per claims 3, 17, and 27, Bjornson teaches requesting workload acceptance from the target server at peer level (Paragraphs 56, 60-61).

9. As per claims 4, 18, and 28, Bjornson teaches recording the parent workload group as inactive at the active server (Paragraph 56: those worker computer that are forced to wait are considered to be inactive.).

10. As per claims 5, 19, and 29, Bjornson teaches transferring application-specific objects corresponding to the child workload groups at peer level (Paragraphs 60-62: tasks are essentially programs that implements algorithms. The Examiner has interpreted the program to be application-specific objects. When one of the divided task is added back to the Task List, the sub-task is transferred.).

11. As per claims 6 and 30, Bjornson teaches redirecting entities operating on elements of the parent workload group to the target server managing the child workload

group (Paragraph 56, 60, 71-74: database corresponds to entities. They can be split up according to how the tasks are split up. When a sub-task with its associated database gets assigned to another worker computer, entities are redirected.).

12. As per claims 11, 22, and 34, Bjornson teaches further comprising associating the workload unit with the key identifier such that the key identifier encodes one or more attributes of the workload unit (Fig 5: Because the naming system contains the name of the parent task for each sub-task, the parent identification in a child's name corresponds to an attribute.).

13. As per claim 24, Bjornson teaches an external service configured to identify at least one candidate resource to which the child workload groups may be distributed (Paragraph 56: the VSM, which are external to the worker computers governs how the task may be taken by the worker.).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 12-14, 23, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjornson et al., Pub No. 2002/0194173 (hereafter Bjornson) in view of Shimosato et al., Patent No. 7,024,563 (hereafter Shimosato).

16. As per claims 12 and 23, Bjornson teaches wherein the virtual key includes a number of masked of digits, the number of masked digits dependent on the overload condition (Fig 5, unit c: Taskt1.A1 where the two numbers of 1s corresponds to masked of digits.).

Bjornson does not specifically teach constructing a virtual key for mapping to the target server.

However, Shimosato teaches using a constructed load-dependent virtual key as an input to a separate mapping service that returns the identity of the target server to which the workload units belonging to the virtual key should be directed for the purpose of identity mapping (Column 21, lines 37-43).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of Bjornson with using a constructed load-dependent virtual key as an input to a separate mapping service that returns the identity of the target server to which the workload units belonging to the virtual key should be directed, as taught by Shimosato, because allows for identity mapping.

17. As per claim 13, Shimosato teaches using the constructed load-dependent virtual key as an input to a separate mapping service that returns the identity of the target server to which the workload units belonging to the virtual key should be directed (Column 21, lines 37-43).

18. As per claim 14, Bjornson teaches a system for running a distributed computer application whose workload can be decomposed into a set of workload units, each workload unit including its own key identifier, over a dynamically varying set of distributed resources, the number of distributed resources involved in the distributed computer application varying dynamically in response to changes in an overall workload, the system comprising (Fig 5 and paragraph 60):

a set of active resources cooperatively managing an entire set of identifier keys constituting the overall workload, each individual active resource managing a dynamically varying group of identifier keys, each active resource independently evaluating its own workload condition and deciding on the creation to reduce its workload (Fig 5, paragraphs 60);

an overall set of resources, of which the active resources constitute a subset that can be utilized as part of the distributed computer application as needed (Paragraphs 60-61);

a set of client entities utilizing the distributed computer application, each client entity being associated with at least one identifier key, and each client entity

dynamically determining the dynamically varying group of key identifiers that it currently belongs to (Fig 5);

consolidating identifier keys (Paragraph 69, 91 and Fig 5);

consolidating workloads together to increase its workload (Para 91).

Bjornson does not teach that the consolidated workload group would itself have identical sequence of values at a specified depth value of the consolidated key identifier.

However, it would have been obvious to one having ordinary skill in the art to apply the scheme of using identical sequence value for the output of consolidated workload group onto just the workload group itself such that when consolidated, the work group itself would share certain identical sequence since it would provide easier tracking of workload groups.

Furthermore, Shimosato teaches a mapping service configured to receive a virtual key associated with at least one of the dynamically varying group of identifier keys as input and configured to produce an identity of a target resource from the overall resource set as an output for the purpose of identity mapping (Column 21, lines 37-43).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of Bjornson with a mapping service configured to receive a virtual key associated with at least one of the dynamically varying group of identifier keys as input and configured to produce an identity of a target

resource from the overall resource set as an output, as taught by Shimosato, because it allows for identity mapping.

19. As per claim 35, Shimosato teaches program code configured to construct a virtual key for mapping to the target resource, wherein the virtual key includes a hash value of the key identifier (Column 21, lines 37-43).

20. Claims 7-8, 31, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjornson et al., Pub No. 2002/0194173 (hereafter Bjornson) in view of Eidson, Patent No. 6,125,420 (hereafter Eidson).

21. As per claims 7 and 31, Bjornson discloses a system that can break down a single task into different levels of sub-tasks, each with its associated identifier, so that they may be assigned to computers according to the computer's dynamic workload. Furthermore, Bjornson teaches estimating the amount of computational resources available in each computer to see if a task needs to be broken down. Bjornson also teaches a group key identifier that indicates the nearest known active parent group to which it belongs (Fig 5; Paragraphs 60-61).

Bjornson, however is silent as to, the specifics of receiving a probe message from an entity work load unit, the entity workload unit being a member of the parent workload group, the probe message including a selected identifier key formed by selecting a depth to be associated with the entity workload unit's key identifier; and

sending a response to the entity indicating the group key identifier that a current server locally determines to be the nearest known active parent group to which the element's key identifier belongs.

Eidson teaches receiving a probe message from an entity work load unit, the entity workload unit being a member of the parent workload group, the probe message including a selected identifier key formed by selecting a depth to be associated with the entity workload unit's key identifier; and sending a response to the entity indicating the group key identifier that a current server locally determines to be the nearest known active parent group to which the element's key identifier belongs for the purpose of group identification and communication between nodes and its parent groups (Abstract; Column 3, lines 1-6, lines 15-25, 38-50; Column 4, lines 5-27, 45-55).

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of Bjornson with receiving a probe message from an entity work load unit, the entity workload unit being a member of the parent workload group, the probe message including a selected identifier key formed by selecting a depth to be associated with the entity workload unit's key identifier; and sending a response to the entity indicating the group key identifier that a current server locally determines to be the nearest known active parent group to which the element's key identifier belongs, as taught by Eidson, Because it allows for group identification and communication between nodes and its parent groups.

22. As per claim 8, Eidson teaches wherein the entity operating on a workload unit uses the response to further refine its estimate of a correct depth to be associated with the unit's key identifier; and probing another server associated with the parent key group formed by using the refined depth of the unit's key identifier (Column 3, lines 1-6, lines 15-25, 38-50).

23. As per claim 33, Bjornson teaches wherein the program code to generate the consolidated key includes program code to decrease the depth value of the parent workload group (Fig 5 and Para 69) and further teaches consolidating workload group (Para 91).

Claims 9-10, 20-21, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjornson et al., Pub No. 2002/0194173 (hereafter Bjornson).

24. As per claims 9, 20, and 32, Bjornson teaches

determining that an under-load condition exists at the active server (Paragraphs 95-96: limitation is set for the amount of time a worker computer is to remain idle, when it is exceeded, it is inherent that the system will know that a worker computer is under-loaded.)

identifying at least two workload groups for consolidation into a consolidated workload group (Para 91)

generating a consolidated key identifier such that outputs of workload units belonging to the consolidated workload group share an identical sequence of values at a specified depth value of the consolidated key identifier; and managing the consolidated workload group by the active server (Paragraph 69, 91 and Fig 5).

Bjornson does not teach that the consolidated workload group would itself have identical sequence of values at a specified depth value of the consolidated key identifier.

However, it would have been obvious to one having ordinary skill in the art to apply the scheme of using identical sequence value for the output of consolidated workload group onto just the workload group itself such that when consolidated, the work group itself would share certain identical sequence since it would provide easier tracking of workload groups.

25. As per claims 10 and 21, Bjornson teaches wherein generating the consolidated key identifier includes decreasing the depth value of the parent workload group such that the consolidated workload group is identified (Fig 5: please note the ID given for task blocks colored in gray.).

Response to Arguments

26. Applicant's argument filed on 12/1/2008 claims 1-35 have been fully considered but are not persuasive.

27. In the remark applicant argued in substance that:

i) Claim 1, top of Pg 17, Bjornson does not teach dynamically adjusting a workload of an active server…a group key identifier associated with the parent workload.

ii) Claim 1, Pg 17-18, Bjornson does not teach independently determining by the active server that an overload condition exists at the active server and increasing the depth value of a parent workload group such that at least two child workload groups are identified.

iii) Because Bjornson does not teach claim 1, claims 2, 3, 5, 6, 24 are not taught.

iv) Claim 4, Bjornson does not teach recording the parent workload group as inactive at the active server.

v) Claim 11, Bjornson's teaching of partitioning a set of records is different from what is claimed by the applicant which is associates a workload unit with the key identifier such that the key identifier encodes one or more attributes of the workload unit.

28. The examiner respectfully disagrees with the applicant. As to point:

i) Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

ii) Bjornson teaches in Para 60 that if a task is too large for a worker computer, the task will be divided into two smaller searching task and only one of the tasks will be retained by that worker computer to process. Here the worker computer corresponds to the server and the act of determining that a task is too large for itself corresponds to determining that an overload condition exists. Furthermore, Bjornson teaches that the depth of the parent workload group may be increased, as shown in the multiple depth of the tree in Fig 5 whenever a workload is broken up into two subtasks (Para 61, lines 10-14).

iii) Please see explanation above.

iv) Although vaguely stated, the Examiner interpreted this claim to mean a task that is waiting, hence inactive, to be processed by an active resource, which is a worker computer. This is taught in Para 56, lines 8-17.

v) The applicant is mistaken if he thinks that Bjornson merely teaches a partitioning of a set of records. Bjornson teaches partitioning of actual searching tasks into smaller tasks such that they may be easier to handle for each worker computer (Para 60). Furthermore since the applicant is not specific as to what the attributes that identifier is suppose to encode, the Examiner has mapped

"Task 1" of Task1.A.2 to an attribute since this encodes the information that Task1.A.2 actually has a parent of Task1.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MENGYAO ZHE whose telephone number is (571)272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/
Supervisory Patent Examiner, Art Unit 2195